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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LIN, WEN TAI

ART UNIT	PAPER NUMBER
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2154

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

xi

Office Action Summary

Application No.

09/583,966

Applicant(s)

HALL ET AL.

Examiner

Wen-Tai Lin

Art Unit

2154

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-14, 16 and 18-40 is/are rejected.
- 7) ☒ Claim(s) 9, 15, 17, 41, 46, 53 and 58 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5/31/2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-58 are presented for examination.
2. The text of those sections of Title 35, USC code not included in this action can be found in the prior Office Action.
3. The amendment to the specification for the fourth paragraph on page 7 is objected to because the newly modified term "at least twenty-seven (27) or less slots ..." has essentially set no limit to qualifying the "almost full" status. Such modification has not removed the conflicts stated in paragraphs 2-3 of the previous office action. As such, those related previous objections remain.
4. The amendment to the specification for the last paragraph on page 9 is objected to because the new clause "at least three columns of data away from a completely empty FIFO buffer" is understood as "the number of columns of data has to be at least three" (to qualify an "almost empty" status). That is, the newly modified term contradicts the interpretation that followed at lines 6-7 on page 3 of the response to the previous office action.

Claim Rejections - 35 USC § 112

5. Claims 1-4, 10-12, 18-21, 25-27 and 31-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctively claim the subject matter which applicant regards as the invention.

(i) As to claims 1-4, 10-12, 18-21 and 25-27, it is unclear how a buffer status (which is an attribute of the buffer) has anything to do with a transport gap (which describes an overhead portion of a frame structure, of which overhead data is not entered into the buffer). That is, without further engaging an implementation process, the word "keying" (or "identifying", as suggested by the applicant in a remark in response to the previous office action) is indefinite because the relationship between the buffer status and the transport gap (i.e., the buffer status and the transport gap) has not been properly defined in the claims.

(ii) As to claims 31-38, it is unclear what does "the number of columns" stand for [i.e., the number being equate to the amount of remaining empty slots in the buffer or the amount of occupied slots in the buffer?].

(It is noted that the Applicant misunderstood this question in the response to the previous office action. Applicant states that "the number of columns" does not refer to slots in the buffer, but to the column found in the non-standard SONET transport gap. However, the question relates to the "almost full buffer detector", which sets the condition for an "almost full" status, by checking how many occupied or empty slots in the buffer. For any given column number, it is required to state whether this

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number refers to the occupied or empty slots, because there are various ways of defining the "almost full" status is defined in the specification (e.g., an almost full could mean at least n empty slots from complete full or at least n occupied slots in the buffer.)

Claim Rejections - 35 USC § 102

6. Claims 1-6, 8, 10-14, 16 and 18-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Ryan et al.[U.S. Pat. No. 6628651].
7. As to claim 1, Ryan teaches the invention as claimed including: a method for determining buffer status, said method comprising:
 - keying a buffer status to a transport gap other than a standard SONET transport gap [Figs.5 & 8; Abstract; col. 8, lines 32-59; note that since TVT is a non-standard payload frame, its associated transport overhead, be it possessing the same transport overhead structure as that of a standard SONET frame, is also referred to as a non-standard transport gap – see Applicant's remarks at page 18, line 6 wherein Applicant clarifies that "a non-standard transport gap is the transport gap of a non-standard frame].
8. As to claims 2-3, Ryan further teaches that said keying a buffer status to a transport gap other than a standard SONET transport gap further comprises:

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- keying a transmit buffer status of a transmit buffer to a transport gap other than the standard SONET transport gap [141-146, Fig.4; i.e., each of the output side interface has a transmit buffer holding the frame overhead as illustrated in Fig.5], wherein

- the transmit buffer interposed between a pointer interpreter [212, Fig.5] which receives data from a switching matrix [40, Fig.4] and a pointer generator [216, Fig.5] which prepares a standard SONET STS-N frame [Abstract: lines 5-9]

9. As to claims 4-5, Ryan further teaches that said keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:

- keying the transmit buffer to at least a column length of a non-standard SONET transport gap, wherein each column of the non-standard SONET transport gap contains 1 byte per each STS channel in use [Fig.9; col.8, lines 51-59; col.11, lines 16-54].

10. As to claim 6, Ryan further teaches that said keying the transmit buffer to at least a column length of a non-standard SONET transport gap further comprises:

- keying a pointer generator constructed to read data from the transmit buffer to at least a column length of a non standard SONET transport gap [216, Fig.5].

11. As to claim 8, Ryan further teaches that said keying the transmit buffer to at least a column length of a non-standard SONET transport gap further comprises:
 - keying a pointer interpreter constructed to write data to the transmit buffer to at least a column length of a non standard SONET transport gap [212, Fig.5].
12. As to claims 10-14, 16 and 18-30, since the features of these claims can also be found in claims 1-6 and 8 (note that Ryan's system includes both receive buffer and transmit buffer, which are symmetrically identical), they are rejected for the same reasons set forth in the rejection of claims 1-6 and 8 above.
13. Claim 39 is rejected under 35 U.S.C. 102(e) as being anticipated by AAPA [Applicant Admitted Prior Art].
14. As to claim 39, AAPA teaches the invention as claimed including: a method for maintaining communications comprising:
 - detecting a transition involving at least one SONET frame;
 - in response to said detecting yielding a determination that a receive FIFO buffer is almost full during the transition involving at least one SONET frame, engaging in negative stuffing; and
 - in response to said detecting yielding a determination that a receive FIFO buffer is almost empty during the transition involving at least one SONET frame, engaging in positive stuffing [Specification: page 2, paragraph 2].

15. Claims 39-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Baydar et al.[U.S. Pat. No. 5717693].

16. As to claim 39, Baydar teaches the invention substantially as claimed including:

a method for maintaining communications comprising:

- detecting a transition involving at least one SONET frame [note: detecting successive frame boundary must have been carried out in order to distinguish payload and header data];
- in response to said detecting yielding a determination that a FIFO buffer is almost full during the transition involving at least one SONET frame, engaging in negative stuffing; and
- in response to said detecting yielding a determination that a FIFO buffer is almost empty during the transition involving at least one SONET frame, engaging in positive stuffing [col.3, lines 31-44; col.19, lines 6-16; Fig.4A].

17. As to claim 40, Baydar further teaches that the determination that a receive buffer is almost full comprises detecting that the receive buffer has less empty space than that required to buffer data during construction of a non-standard transport gap [Abstract; Fig.4A; col.3, lines 5-14; e.g., the payload portion of the VT structure has a format different from the standard SONET frame format -- a non-standard SONET format].

Claim Rejections - 35 USC § 103

18. Claims 9, 31-38, 42-45, 47-52 and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baydar et al.[U.S. Pat. No. 5717693], as applied to claims 39-40, further in view of Ryan et al. [U.S. Pat. No. 6628851], as applied to claims 1-6, 8, 10-14, 16 and 18-30 above.

19. As to claim 9, Baydar teaches the invention substantially as claimed including flagging a receive buffer with an almost full status and an almost empty status for preventing the buffer being inadvertently overwritten and for balancing the input/output rate differences. The system is constructed for overcoming the STS/STM standard SONET transport gap [See Abstract; Fig. 4A and related text].

Baydar does not specifically teaches that the system is also applicable to a transmit buffer.

However, Ryan teaches a system with an interface stage buffer coupled to each input and out channel of a space switch, wherein the buffer associated with the input channel is a receive buffer (involving the role of converting from a standard SONET frame to a non-standard internal TVT frame) and the buffer associated with the output channel is a transmit buffer (involving the role of converting from the internal TVT frame to a standard SONET frame), respectively [See Abstract and Figs. 3-5 and passages cited in the aforementioned paragraphs of this office

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action]. It is obvious to one of ordinary skill that, in light of symmetrical nature of Ryan's transmit and receive buffers, Baydar's elastic buffer can be utilized both as transmit and receive buffers because the structures of transmit and receive buffers are basically the same.

20. As to claims 31-38, 42-45, 47-52 and 54-57, since the features of these claims can also be found in claims 1-6, 8-9, 10-14, 16, 18-30 and 39-40, they are rejected for the same reasons set forth in the rejections of claims 1-6, 8-9, 10-14, 16, 18-30 and 39-40 above.

As for the specific requirement for setting the receive (or transmit) buffers as "almost empty" (or "almost full") for a 3-5 columns of slots from empty (or from full), it is noted that both Baydar's and Ryan's systems deal with the standard and non-standard transport gaps, each having 3 columns per row of overhead data in STS-1 and TVT (or VT/TU) frames. Thus it is obvious to set Baydar's almost full and almost empty statuses to 3-5 columns because this is in the ballpark of timing latency while adjusting for the differences between the incoming and out-going frames.

21. Claims 7, 15 and 17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office Action and to include all of the limitations of the base claim and any intervening claims.

22. Claims 41, 46, 53 and 58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
23. Applicant's arguments filed on 4/9/2004 for claims 1-6, 8-14, 16-40, 41-45, 47-52 and 54-57 have been fully considered but they are not deemed to be persuasive.
24. Applicant argues in the remarks that:
1. Regarding the 112 2nd paragraph rejection on claims 1-4, 10-12, 18-21 and 25-27, Applicant asserts that the relationship between buffer status and transport gap as presented in the claim has been properly defined in the specification.
 2. Applicant does not know why claims 5-9, 13-14, 16-17, 22-24 and 28-30 were rejected under 112 2nd paragraph without specific reasoning or rationale for such rejection.
 3. Ryan does not teach (i) determining buffer status; (ii) flagging the buffers with almost full and almost empty statuses; and (iii) disclose converting from STS-1 to SDF.
 4. Regarding claim 39, AAPA does not teach the claimed features.
 5. Regarding the rejection of claims 39-40, the cited reference Baydar does not teach a relationship between frame transition and stuffing, neither Baydar teaches the treatment of non-standard SONET.

6. Regarding claims rejected under USC 103: there is no support of motivations for combining Ryan and Baydar's teachings.

25. Examiner respectfully disagrees with applicant's remarks:

1. As to point 1: the issue at hand is about engaging implementation steps for the phrases "keying", "buffer status" and "a non-standard SONET transport gap".

Based on the second paragraph on page 4 of the specification:

"...if either pointer interpreter 102 or pointer generator 106 is keyed to a non-standard SONET frame format ... severe difficulties arise with respect to determining the almost empty and almost full buffer conditions, which consequently give rise to difficulties in performing appropriate negative and/or positive stuffing"

it is asserted that the claim language "keying a buffer status to a transport gap other than a standard SONET transport gap" does not solve the problem; it is simply a part of the problem statement because there is no steps involved in solving the difficulties in determining the almost full and almost empty buffer statuses in claims 1-6, 8, 10-14, 16 and 18-30. Note that although dependent claims 2-6, 8, 10-14, 16 and 19-30 only added various limitations relating to the buffer and/or the transport gap, these added features have nothing to do with the aforementioned fundamental problem.

2. As to point 2: claims 5-6, 13-14, 16, 22-24 and 28-30 are also rejected under 112 2nd paragraph because their parent claims are rejected under the same and the issues got propagated downward until they are solved or clarified (note that

the rejection of claims 9 and 17 under 112 2nd paragraph has been withdrawn in this office action).

3. As to point 3 (i): based on Fig.5 and its relevant text (e.g., col.6, lines 30-40), it is clear that Ryan's read/write buffers must be equipped with buffer statuses.

For example, at col.6, lines 36-40, the buffer address (counter) itself can reflect the status of the buffer: a zero indicating buffer empty and maximum count indicating buffer full or vice versa. As to points 3(ii) and 3(iii): it is noted that such limitations are not found the claim.

4. As to point 4: it is noted that the cited section in the specification clearly teaches using almost full and almost empty for activating negative or positive stuffing, wherein Fig. 1, as referenced by AAPA, involves buffering at least one SONET frame and the transition for the frame boundary must be detected in order to distinguish header from payload.

5. As to point 5: see paragraphs 17-18 of this office action.

6. As to point 6: it is noted that both Ryan and Baydar's system applies to STS and VT frames. The only requirement from Ryan is that Ryan's system demonstrated symmetry in the structure of receive and transmit buffers. Such knowledge prompt one of ordinary skill in the art to recognize that Baydar's elastic buffer (which is used as receive buffer in the listed examples) can be directly used as a transmit buffer.

For at least the reasons set forth above, it is asserted that prior art of record reads on the rejected claims.

26. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

27. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Tai Lin whose telephone number is (703)305-4875. The examiner can normally be reached on Monday-Friday(8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703)305-8498. The fax phone numbers for the organization where this application or proceeding is assigned are as follows:

(703)872-9306 for official communications; and

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(703)746-5516 for status inquires draft communication.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Wen-Tai Lin

May 14, 2004

Wen-Tai Lin
5/14/04